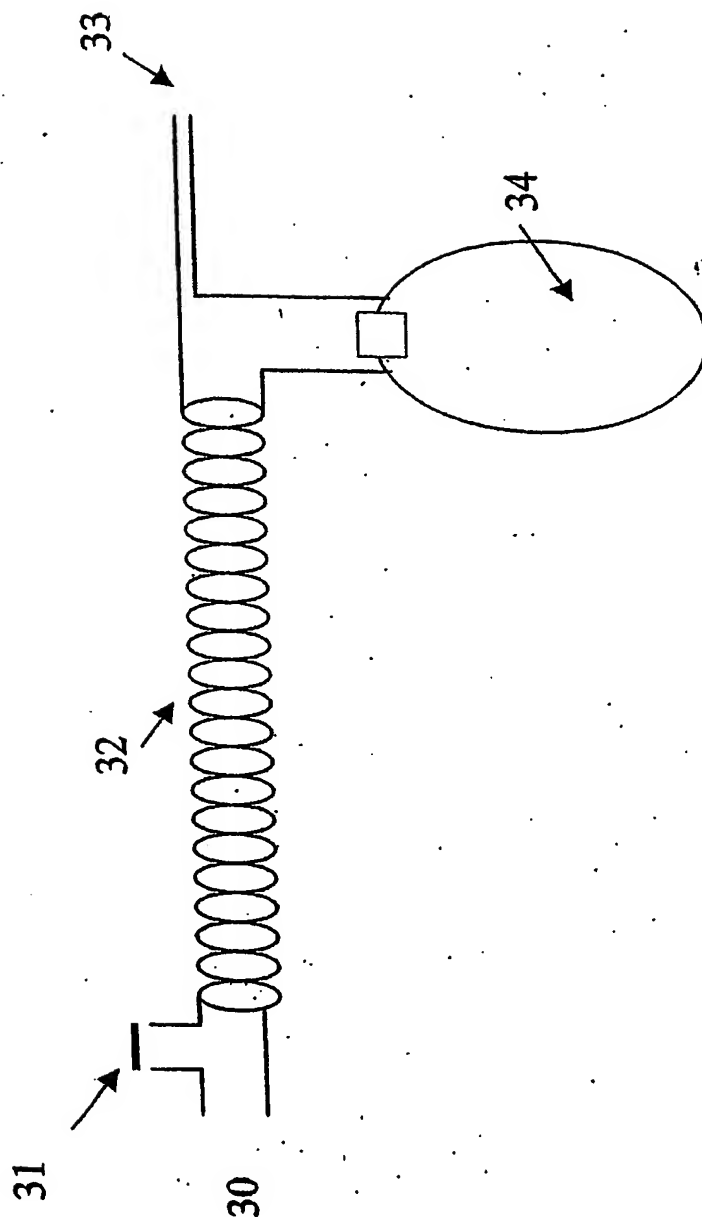


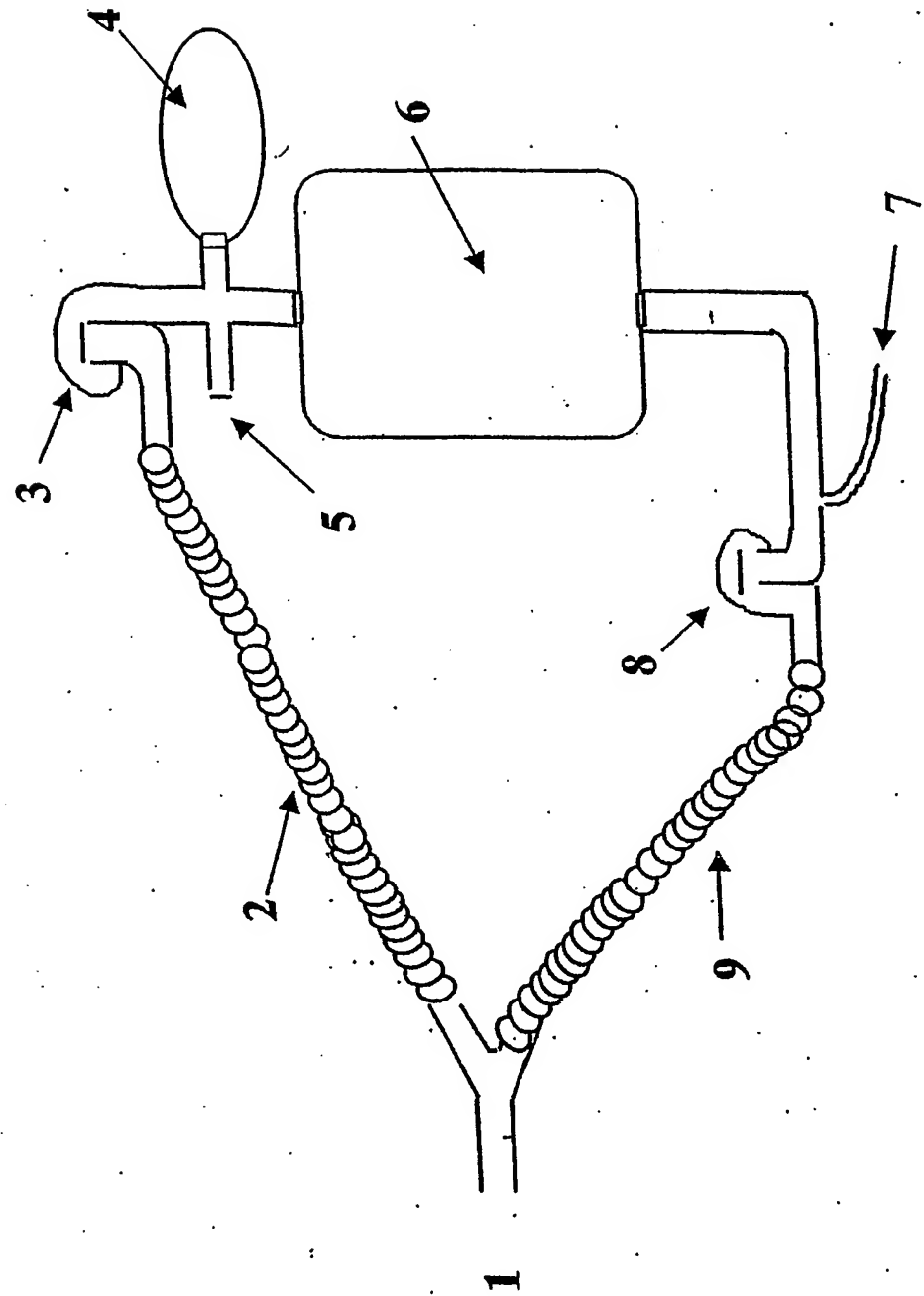
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Figure 1: Schematic diagram of Magill circuit, Mapleson A configuration



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Figure 2. Schematic diagram of circle anaesthetic circuit



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Figure 3: Schematic diagram of Magill circuit, Mapleson A configuration for controlled ventilation

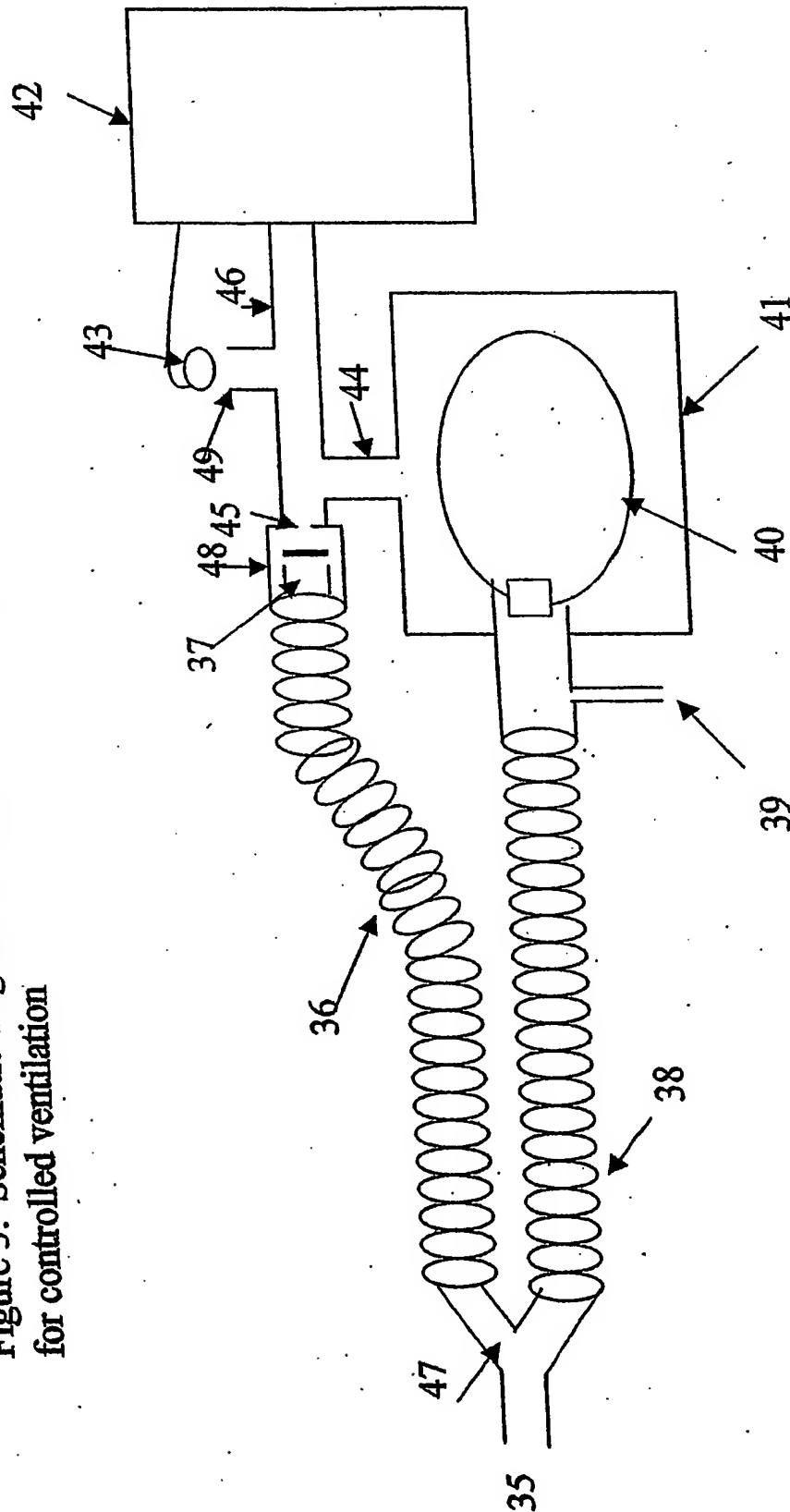


Figure 4: Schematic diagram of rebreathing isocapnia circuit for spontaneous ventilation

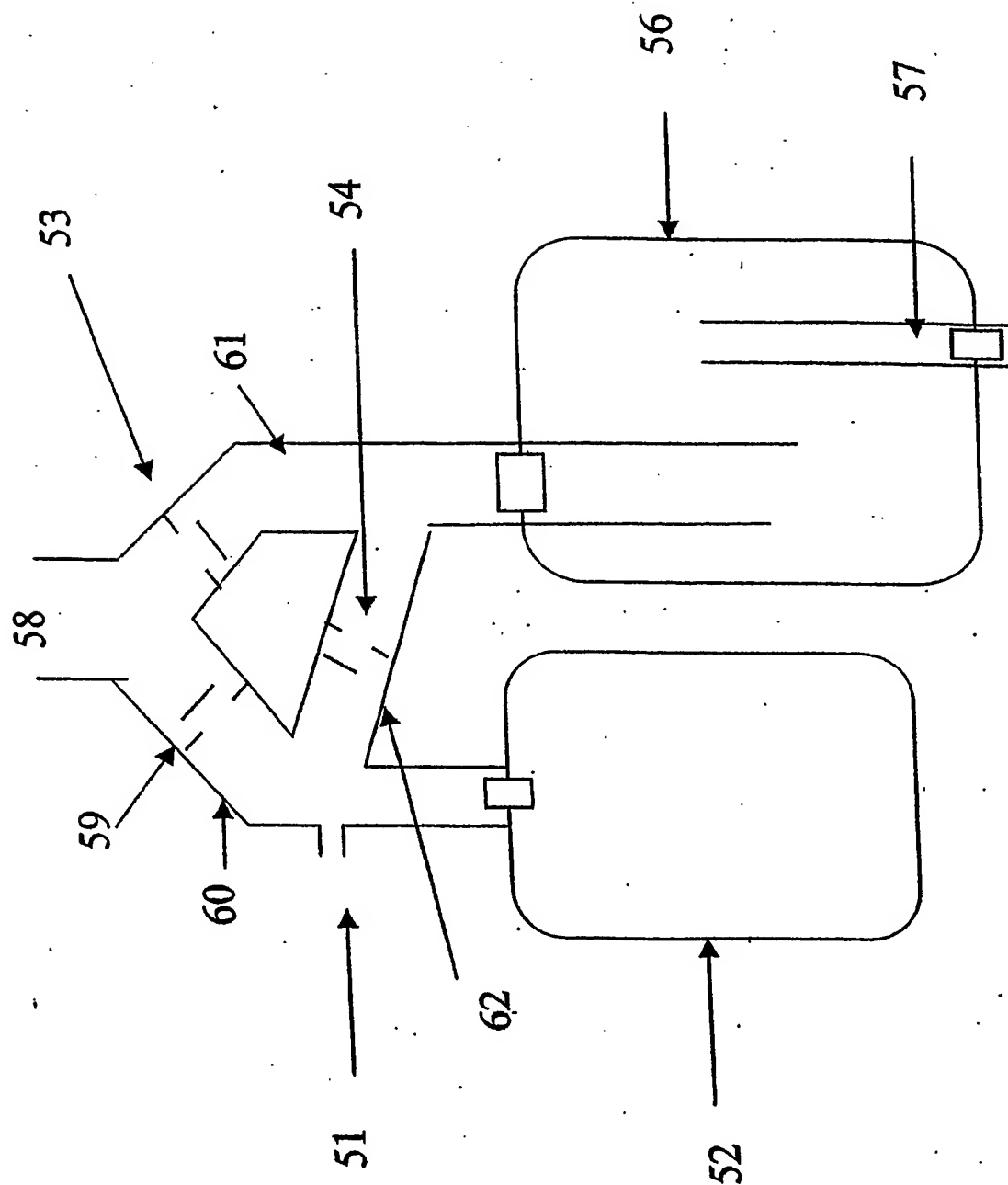
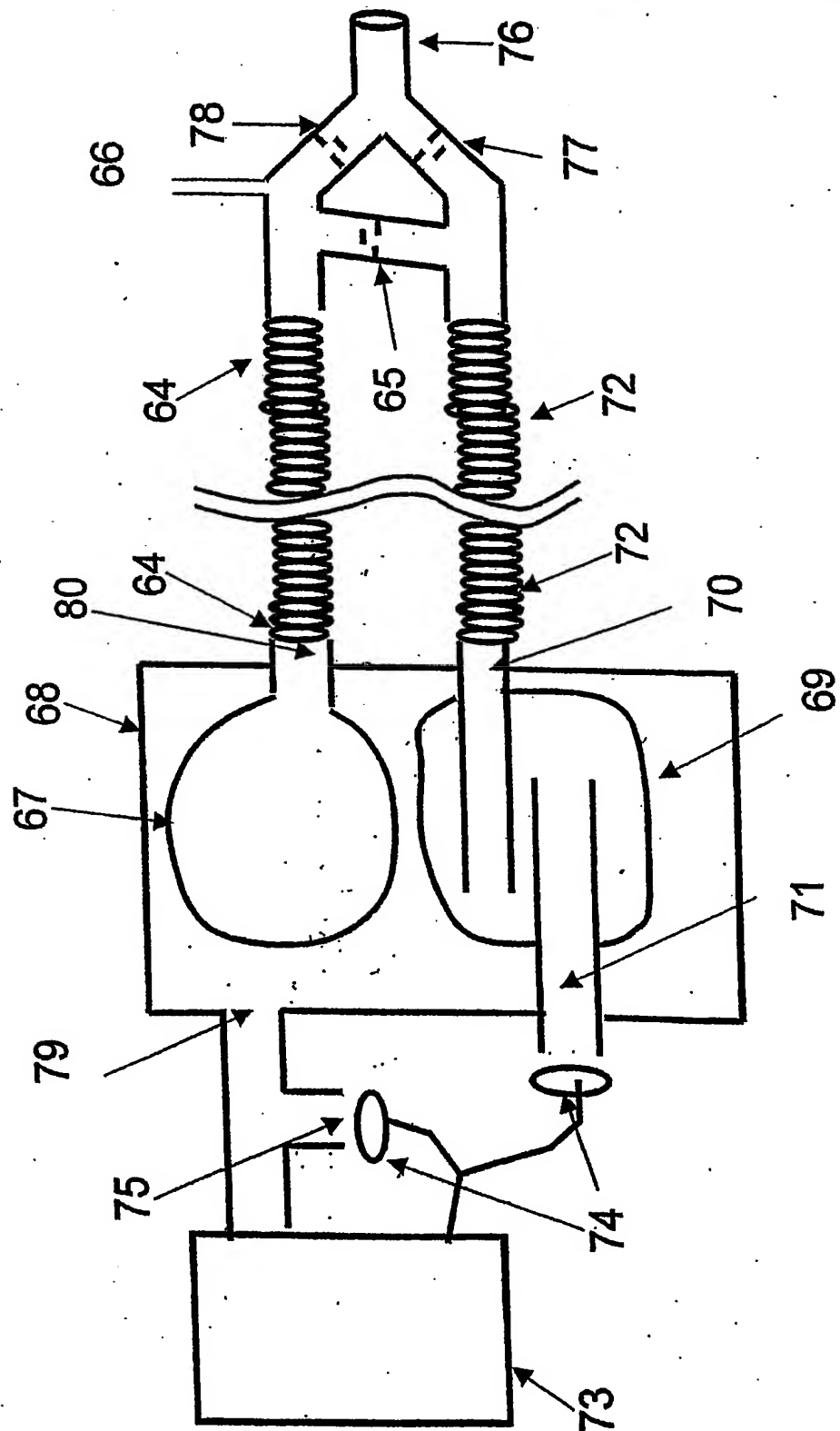
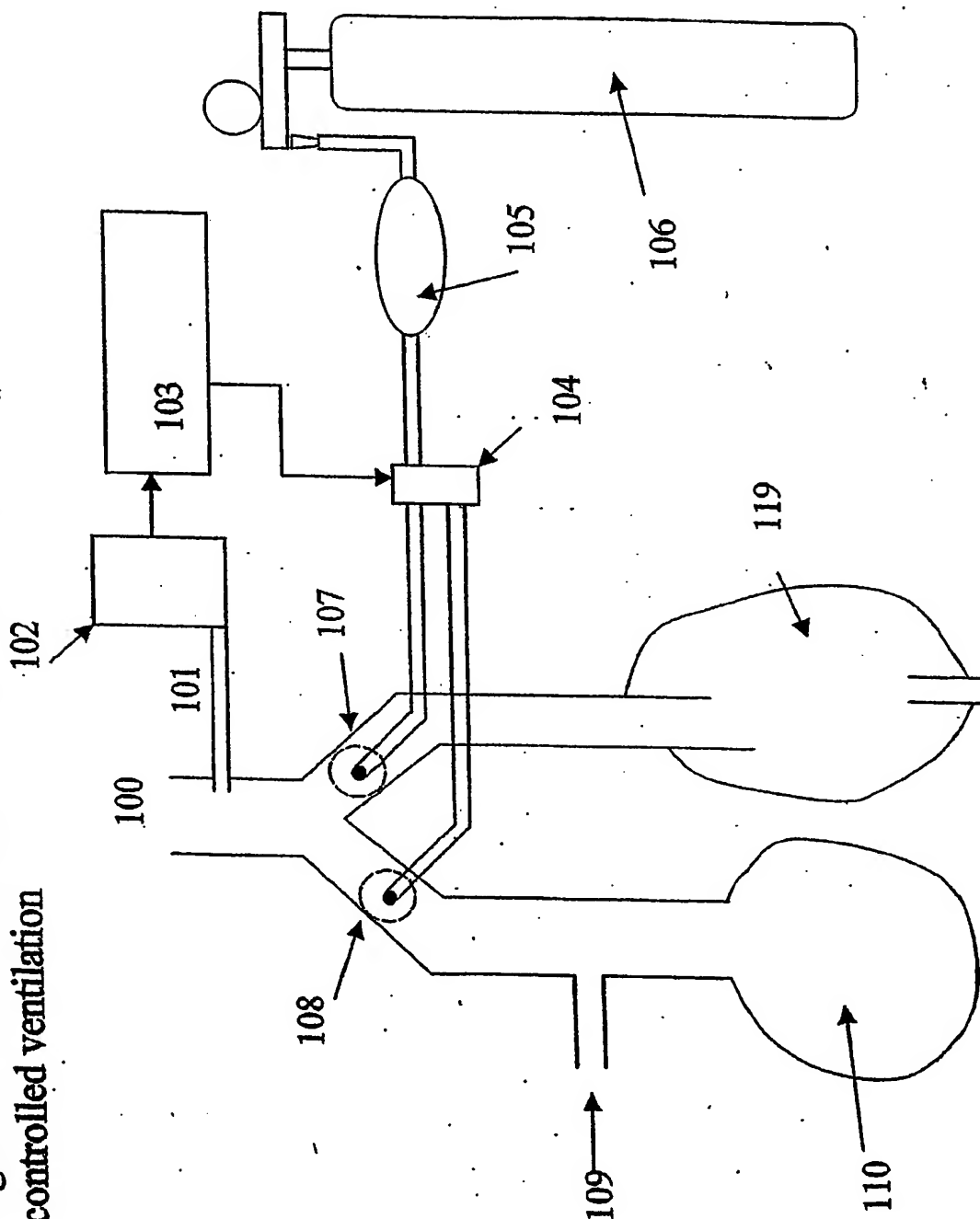


Figure 5. Schematic diagram of rebreathing isocapnia circuit for controlled ventilation



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Figure 6. Schematic diagram of actively controlled rebreathing circuit for controlled ventilation



* Logic board algorithm: 1. positive pressure, balloon deflated. 2. Next negative pressure-> inflate balloon. 3. Next pressure < -2 cm H₂O -> deflate balloon. 4. Next positive pressure, reset to 1. Note: one way valve can be replaced by second balloon valve that is inflated in 1, deflates in 2 and inflates in 3, making the method potentially even more accurate.

Figure 7. Schematic diagram of non-rebreathing isocapnia circuit for spontaneous ventilation

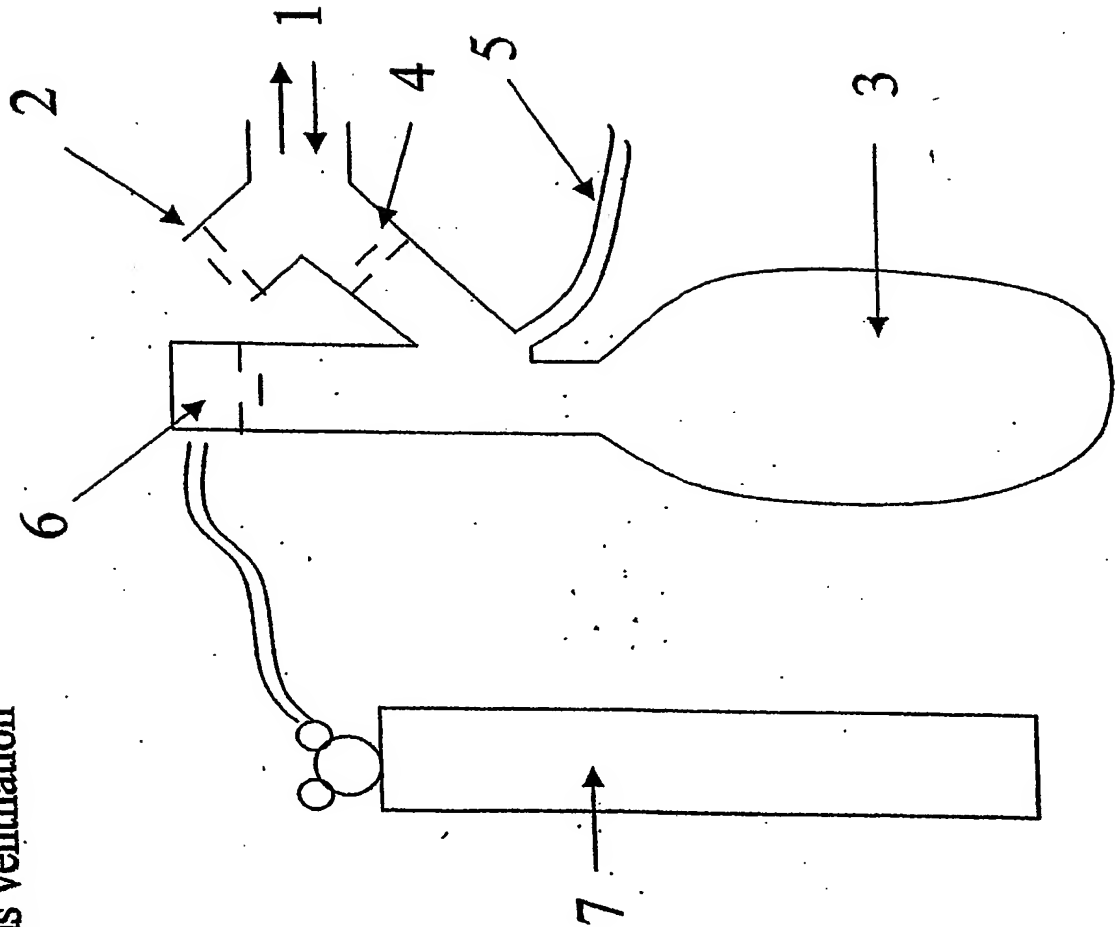


Figure 8. Schematic diagram of non-rebreathing isocapnia circuit for controlled ventilation

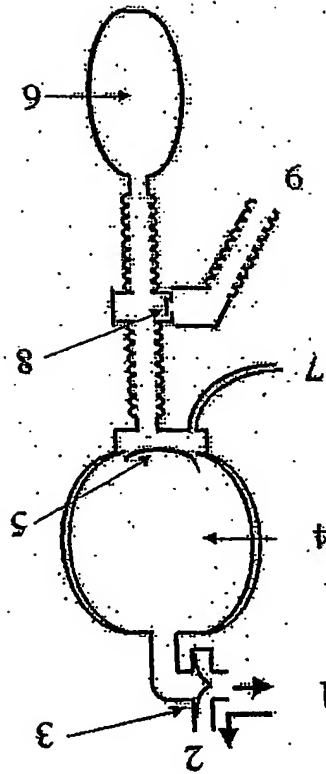
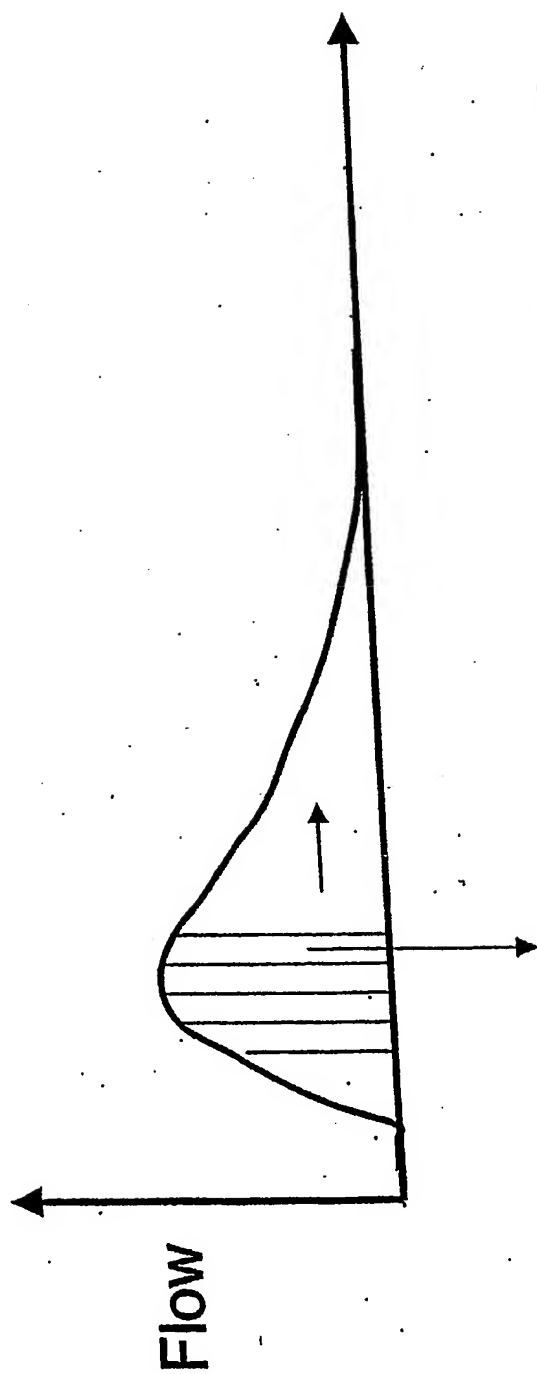
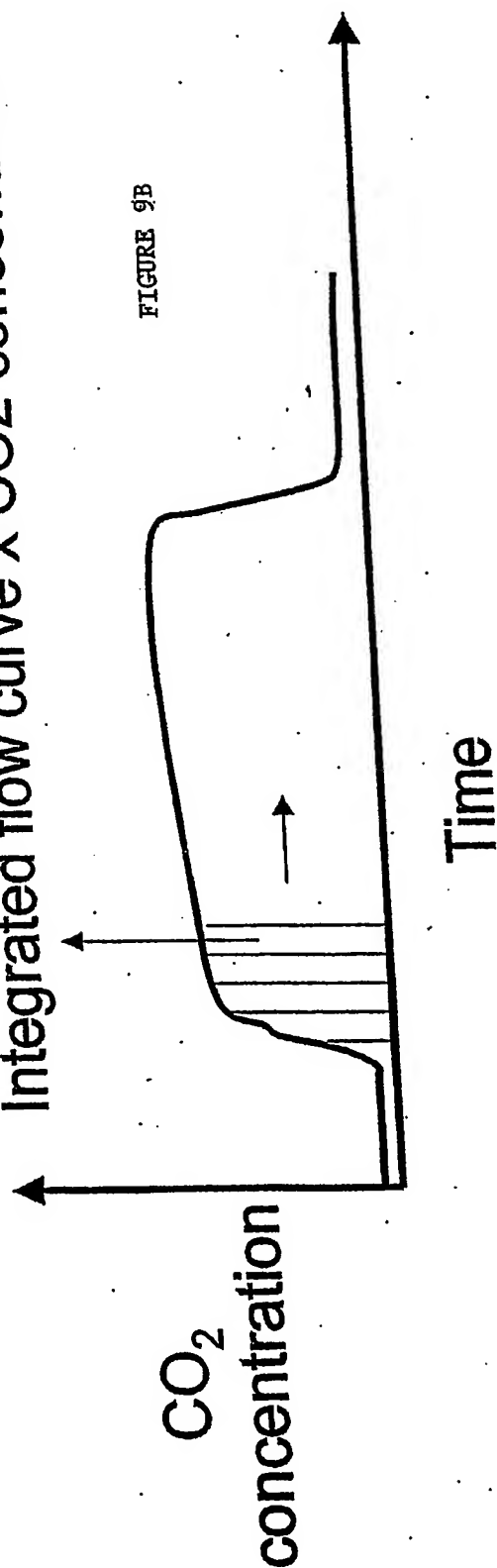


FIGURE 9A



Integrated flow curve x CO₂ concentration

FIGURE 9B



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Figure showing the 95% confidence intervals of our new method for measuring $\dot{V}CO_2$. X-axis shows average $\dot{V}CO_2$ or (Douglas bag $\dot{V}CO_2$ + new method) / 2
Y-axis shows deviation of new method from Douglas bag collection.

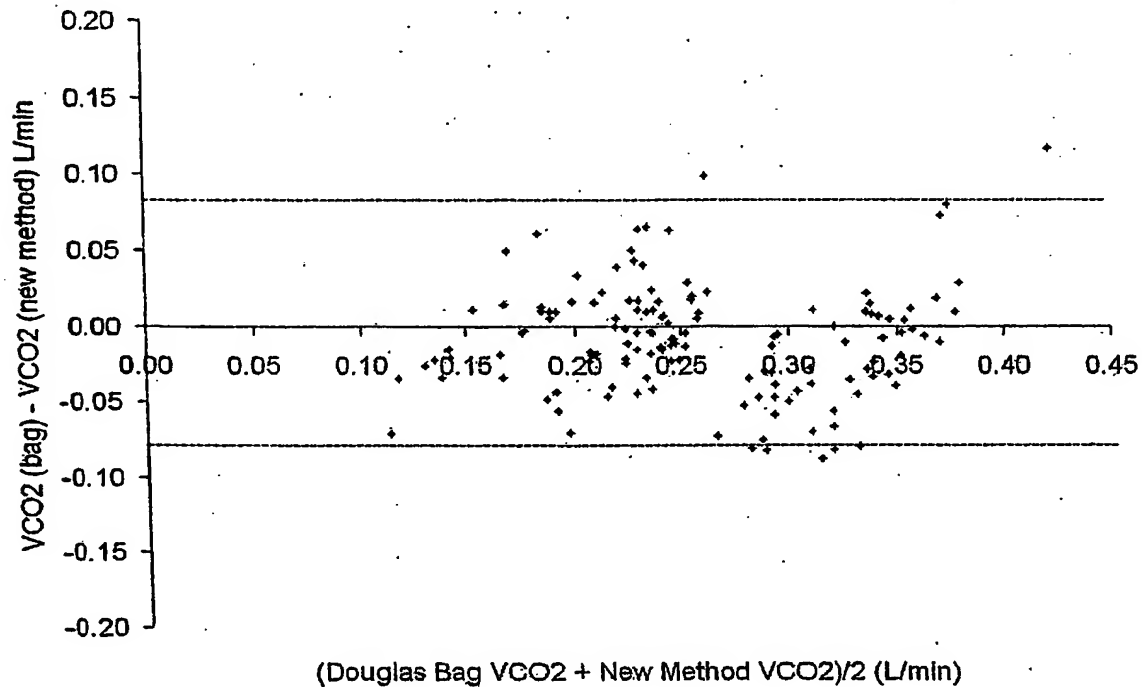


Figure 10

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Figure showing progressive measurements of $\dot{V}CO_2$ using the standard bag collection, our new method, and a metabolic cart. Note the consistency of the new method compared to that of the others.

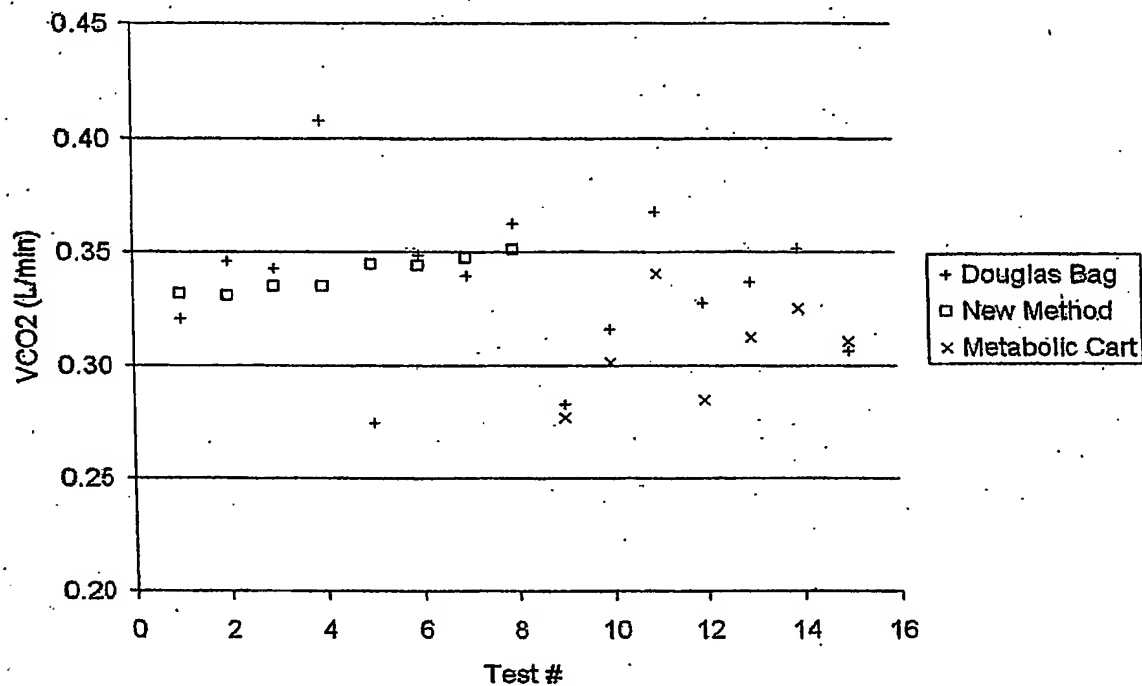


Figure 11

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